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Save beach or birds?

Planting of grass at Duxbury called harmful to habitat

By Eric Niiler
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DUXBURY — For more than two decades, hundreds of schoolchildren, retirees and beach lovers have gathered at Duxbury Beach in the spring to plant beach grass.

Town officials have promoted the annual project as a sure-fire way to keep the fragile beach from washing away while protecting a road that connects homes at Gurnet Point with the mainland.

But now some experts say the planting of grass has transformed the dune system from a wild area into a managed "lawn."

Fields of beach grass, as well as clumps of planted beach rose, are crowding out native plants and eliminating open areas critical for the piping plover and the least tern, two endangered birds that Duxbury officials are under federal mandate to protect.

"They've planted grass even where there's no threat to the road," said Scott Hecker, director of Massachusetts Audubon Society's coastal water bird program and a Duxbury resident. "All that gravel was prime tern and plover nesting habitat. Now it's ruined."

Town officials say Hecker's criticism is off base, and point to the success of the

piping plovers on Duxbury Beach.

"The people advocating the birds have said all sorts of things over the years," said Joe Grady, Duxbury conservation agent and coordinator for beach grass planting since the early 1980s. "The thing to do is see what the endangered species program is doing with the birds. They're raising birds like crazy out there."

Since 1990, the nesting population has increased from one to 10 pairs under the watchful eye of volunteers who guide vehicles and fence off nesting sites.

State wildlife officials say the beach

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Scott Hecker, director of Massachusetts Audubon Society's coastal water bird program, says grass planted on Duxbury Beach has taken over much of the habitat critical to shore birds.

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should be supporting at least 22 pairs, but predation and other natural factors have contributed to the lower-than-expected numbers.

The least tern population has dropped from 150 pairs to 50 pairs since the late 1980s. The terns also are producing fewer chicks.

Duxbury Beach is one of a handful of nesting sites in Massachusetts for both birds. Statewide, there are 460 pairs of plovers and 2,600 pairs of least terns. They need at least 50 feet of open space per nest, while a colony of these birds need 150 to 300 feet of open space.

Beyond the birds

The debate at Duxbury Beach is larger than just a discussion about protecting the birds, Hecker said. It's about protecting a habitat that some environmentalists say is becoming less "natural" every year.

Duxbury Beach is one of the South Shore's greatest treasures, a nine-mile barrier beach that separates Duxbury Bay from the ocean, creating one of the most spectacular summer spots in New England.

It actually begins in Marshfield just south of Green Harbor and continues out to Saquish, a glacial drumlin that once was an island and now is connected to the beach.

In 1919, a group of 20 Duxbury families, known as the Duxbury Beach Association, purchased a four-mile stretch of the beach to protect it from the kind of unchecked commercial development that was occurring at Revere Beach and Coney Island. Over the years, the association added a pavilion and public facilities at the north end of the beach.

In 1969, a Boston University study found that four-wheel-drive vehicles were destroying the beach by killing the vegetation that helps hold the dunes together. In the late 1960s, volunteers set up snow fencing and piled up old Christmas trees to catch sand. In 1974, 150 volunteers planted 50,000 stalks of beach grass to stabilize the area.

The next year, the association realized the beach needed full-time professional management and created the Duxbury Beach Reservation. The reservation includes representatives from the town, local conservation groups and residents of Saquish and Gurnet. The reservation then leased the property to the town, which now manages it through the beach conservation officer and the harbor master's office.

Waves of grass

Since the early 1980s, the town has increased its beach grass planting program, which is funded by the reservation. Yearly planting has ranged from 10,000 to more than 500,000 clumps. The clumps come from Cape May, N.J., and cost 11 cents each.

Grady says he looks for areas where grass has died or was washed away by winter storms. "It all depends on what's bare," Grady said.

The results of the planting are evident along the dirt road leading to Gurnet.

Along the top of the dunes, rows of grass have grown into a thick carpet over the sand. Beach grass, native to coastal New England, grows quickly and can overwhelm other plants that thrive in the harsh conditions of the dune ecosystem: seaside goldenrod, dusty miller, beach pea, false heather and sea rocket.

"If you plant a wheat field in the prairie, you don't get diversity, you eliminate it," the Audubon Society's Hecker said. "Beach grass planting looks like a wheat field."

Several years ago, much of the grass was killed by a plant fungus. Cultivated areas of a single plant species are more vulnerable to invasions by insect and microbial pests than more diverse plant zones.

A similar grass "monoculture" can be found in most backyard lawns, which require fertilizer, pesticides and herbicides to keep it from becoming overwhelmed by insect and weed invaders.

Hecker says the most serious plant problem on Duxbury is beach rose, *Rosa rugosa*, an exotic species from Asia that spreads into impenetrable stands.

It displaces all 16 species of barrier beach-nesting birds and all other beach annuals, perennials and shrubs, Hecker said. Duxbury officials have planted beach rose for years as a way to stabilize the dune.

Town officials have left 20-foot strips of bare ground between some planted areas, but so far no plovers have nested there.

Shifting sands

Hecker has spent the past decade protecting nesting habitat for migratory bird species at more than 50 beaches in Massachusetts. He believes well-intentioned beach restoration efforts on Duxbury such as building sacrificial dunes, erecting snow fencing, piling discarded Christmas trees along the beach and planting grass and beach rose may do more harm than good for wildlife.

Sacrificial dunes like the one designed by the Army Corps of Engineers in 1992 are built to replenish low-lying portions of a beach. They also cover open rocky areas that birds nest in. Plovers and terns need open space to spot both predators and prey. The Corps' dune washed away several months after it was constructed and townspeople rebuilt it the next year.

Despite the best efforts of the Engineers and local volunteers, beaches are constantly shifting. Storms blow through dunes and form fanlike washout areas between the beach and bay sides. Storm waves scrub away sand in the winter and calm seas dump it back on the beach during the summer.

Sand migrates from one beach to another up and down the coast. It's all part of the natural order, researchers say.

Dunes actually are only temporary repositories of sand. They aren't meant to last forever, said Norbert Psuty, a coastal scientist at Rutgers University.

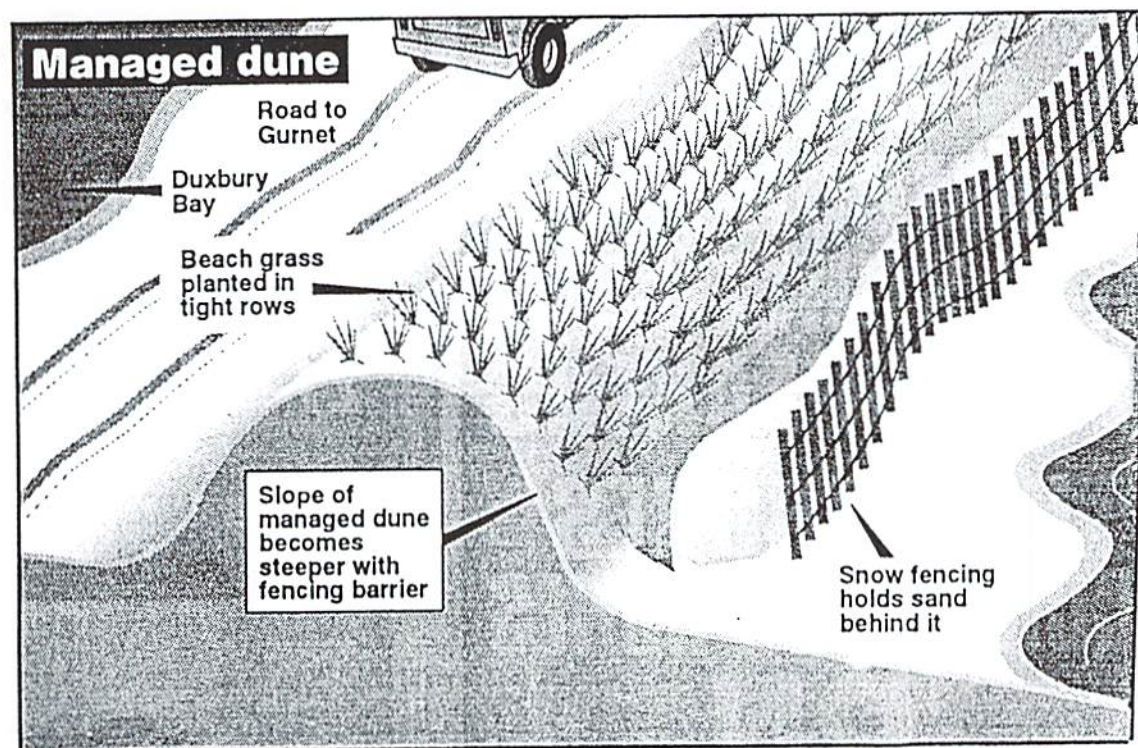
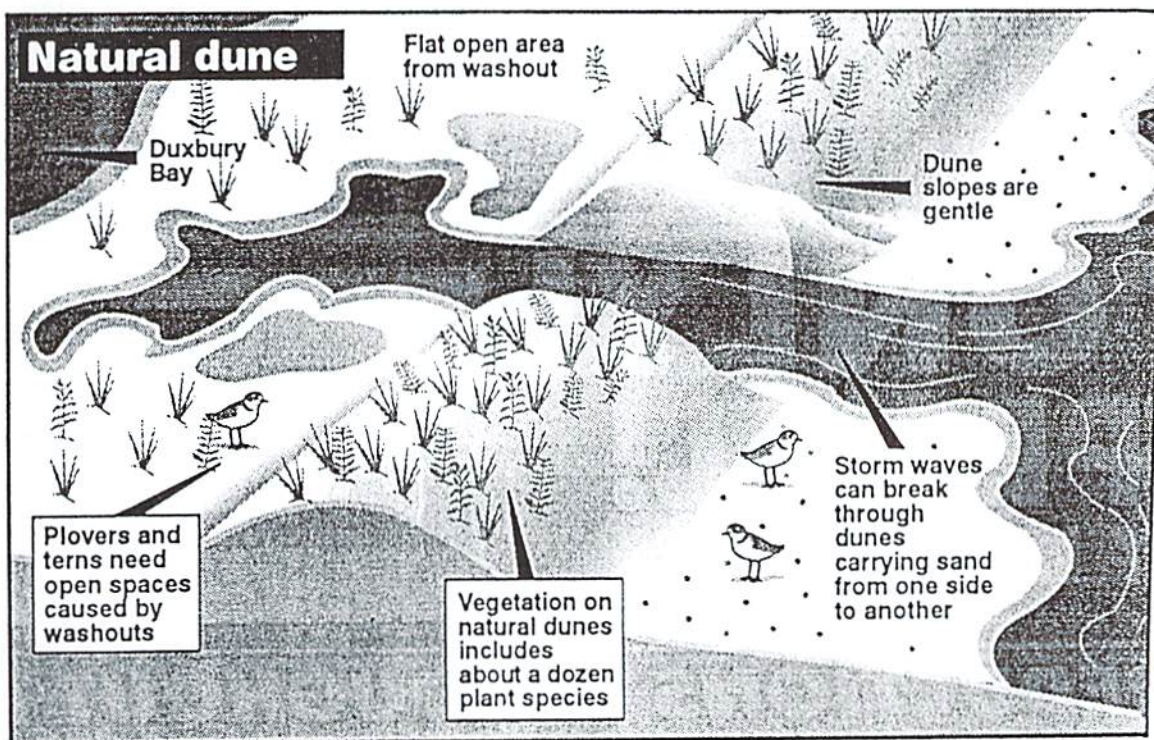
"Building a dune is trying to create a stable system in something that is very dynamic," Psuty said from New Brunswick, N.J. "It's like putting sand on the beach, it doesn't last forever. If you make a conscious decision to make a dune, you also have to do maintenance and replacement."

Planting beach grass doesn't stop sand from being washed away, but can slow down wind erosion.

On Duxbury and on other beaches, planting and dune enrichment projects are a "soft" way of stopping erosion compared to concrete sea walls or stone jetties. These "hard" solutions to the problem of beach erosion have often made things worse. Jetties, or groins, that are perpendicular to a beach trap sand moving down the coast, but leave properties on the other side without sand.

Shifting sands at Duxbury Beach

Natural dunes are characterized by washouts, open spaces and a variety of plant life that thrive in the harsh salty and storm-tossed habitat. Over the past several decades, the natural dune system at Duxbury Beach has been transformed by an ambitious beach grass planting program and rows of snow fencing. This managed dune is designed to stop erosion and prevent sand from blowing away while protecting an access road leading to homes at Gurnet. Environmental critics say overplanting of beach grass has crowded out important plant species and eliminated open spaces vital to nesting piping plovers and least terns.



Sea walls, like those at Nantasket Beach, stop erosion for a while. But they force waves to crest earlier and prevent them from washing higher up on shore. The waves remove rather than add sand to the beach. In time, beaches in front of a sea wall disappear.

Overwashes, or breakthroughs by storm and tidal wave action in the middle of a dune, also are important for a geological reason. They allow sand to move from the ocean side of a barrier beach to the bay side. Over time, the peninsula will rearrange itself.

Planting grass, erecting fences and building up dunes to prevent overwashes, stops this natural rearranging. The entire barrier beach can lose sand and become thinner.

That's happening today on the Outer Banks of North Carolina, said David Aubrey, a coastal scientist at the Woods Hole Oceanographic Institution who has worked as a consultant on beach projects on the South Shore and Cape Cod.

"It's clear that man can mismanage barrier beaches on a major scale," Aubrey said.

At Duxbury, the dispute between wildlife habitat and erosion control will be reconciled in a new five-year plan that will be forwarded from the beach committee to the conservation commission. The plan also will spell out how the town will manage access for four-wheel-drive vehicles. Hecker has submitted formal comments to

the plan to cut the amount of beach planting. He also wants the town to consider wildlife habitat as a goal for any future restoration projects on Duxbury Beach.

Les Smith, vice president of the Duxbury Beach Reservation and an environmental consultant, said the town will continue to plant beach grass when it is washed away, but will keep open areas for piping plovers. Smith is writing the beach plan in consultation with the town.

"It's a difficult process," Smith said. "Everybody is learning about the habitat and the needs of the birds. We're trying to figure out the best way to protect them and allow uses to occur."

Similar disputes over beach planting and wildlife habitat have surfaced in Chatham, Falmouth and Martha's Vineyard. Plymouth stopped putting Christmas trees along the beach in 1992 after the intervention of the Massachusetts Audubon Society.

Because Duxbury Beach is home to endangered species, the new beach management plan must also be approved by the state Department of Environmental Protection and the Division of Fisheries and Wildlife. Scott Melvin, coordinator of the state's plover program, agrees that planting too much beach grass isn't a good idea.

"What we're dealing with is a cycle of erosion, creation and loss of habitat," Melvin said. "We want to see planting of grass avoided in overwash areas. It's a constant issue."

